WHAT IS CLAIMED IS:

1.   An integrated information communication system comprising at least one set of a communication company management network, in which said communication company management network includes an access control apparatus, a relay apparatus, and a server; and said access control apparatus, said relay apparatus, and said server are connected to each other via an internal communication line having a packet transfer function; wherein:

when two, or more sets of said communication company management networks are employed, these communication company management networks are connected via a boundary relay apparatus to each other by using said internal communication line;

an external terminal of said integrated information communication system is connected via a user communication line to said access control apparatus, an internal address is applied to a logic terminal so as to identify said logic terminal of a termination of said user communication line, and also said access control apparatus contains a conversion table;

in such a case that a request identification of said conversion table implies a virtual dedicated line, identification information of a logic terminal into which an external packet is inputted is registered as a record of said conversion table in such a manner that if said identification

information of the logic terminal is determined, then an internal destination address is exclusively determined which is stored in a header of an internal packet produced by an access control apparatus installed on the transmission side;

in such a case that said request identification implies a private address communication, a set of identification information of a logic terminal into which an external packet is inputted, an external source address thereof, and an external destination address thereof is registered as a record of said conversion table in such a manner that if said information/address set is determined, then said internal destination address is exclusively determined which is stored into the header of the internal packet produced by the access control apparatus installed on the transmission side;

with respect to identification information of the same logic terminal, a set of said external destination address and said internal destination address stored into said header portion is made different from each other every record; and a delivery destination of said external packet can be changed by changing an external destination address contained in an external packet which is entered from the same logic terminal;

in such a case that said request identification implies a non-private address communication, a set of said identification information of the logic terminal and said source address is registered as a record of said conversion

table; said registration implies a transmission permission with respect to a terminal having said external source address; said external packet is reached from said terminal via said user communication line to an access control apparatus; a detection is made of such a fact that as a first case, said request identification is registered as a virtual dedicated line into a record of said conversion table containing the identification information of the logic terminal into which said external packet is inputted; as a second case, said request identification is registered as a private address communication into the record of said conversion table; as a third case, said request identification is registered as a non-private address communication; in both said first case and said second case, said external packet is converted into said internal packet by employing both logic terminal identification information and an internal destination address, which are acquired from said conversion table; in said third case, while said external packet is directly used as an internal packet, said internal packet acquired in said first case to said third case is transferred via said internal communication line and said relay apparatus provided in said integrated information communication system, and also is transferred via a logic terminal of an access control apparatus installed on the reception side to another user communication line so as to be thereby reached to another terminal and when

a packet filter employed in said access control apparatus detects that the destination address contained in said external packet corresponds to such an address which is not opened outside network, said packet filter discards said detected external packet.

2.   An integrated information communication system comprising at least one set of a communication company management network, in which said communication company management network includes an access control apparatus, a relay apparatus, and a server; and said access control apparatus, said relay apparatus, and said server are connected to each other via an internal communication line having a packet transfer function; wherein:

when two, or more sets of said communication company management networks are employed, these communication company management networks are connected via a boundary relay apparatus to each other by using said internal communication line;

an external terminal of said integrated information communication system is connected via a user communication line to said access control apparatus, an internal address is applied to a logic terminal so as to identify said logic terminal of a termination of said user communication line, and also said access control apparatus contains a conversion table;

in such a case that said request identification implies a private address communication, a set of identification information of a logic terminal into which an external packet is inputted, an external source address thereof, and an external destination address thereof is registered as a record of said conversion table in such a manner that if said information/address set is determined, then said internal destination address is exclusively determined which is stored into the header of the internal packet produced by the access control apparatus installed on the transmission side;

with respect to identification information of the same logic terminal, a set of said external destination address and said internal destination address stored into said header portion is made different from each other every record; and a delivery destination of said external packet can be changed by changing an external destination address contained in an external packet which is entered from the same logic terminal;

in such a case that said request identification contained in said conversion table implies a non-private address communication, a set of said identification information of the logic terminal and said source address is registered as a record of said conversion table; said registration implies a transmission permission with respect to a terminal having said external source address; an external packet is reached from a terminal via a user communication line to an access control

apparatus;

when it is so detected that a request identification is registered as a private address communication as said first case into a record of said conversion table containing the identification information of the logic terminal into which said external packet is inputted, and

when it is so detected that both the external source address and the external destination address contained in said external packet are registered as a record of said conversion table,

said external packet is converted into said internal packet by employing both the logic terminal identification information and the internal destination address which are acquired from said conversion table;

when it is so found out that said request identification is registered as a non-private address communication as a second case,

if the external source address contained in said external packet is registered into the record of said conversion table, then the transmission permission of the terminal having said external source address can be confirmed, so that said external packet is directly used as said internal packet;

said internal packet is transferred via said internal communication line and said relay apparatus provided in said integrated information communication system, and also is

transferred via a logic terminal of an access control apparatus installed on the reception side to another user communication line so as to be thereby reached to another terminal and

when a packet filter employed in said access control apparatus detects that the destination address contained in said external packet corresponds to such an address which is not opened outside network, said packet filter discards said detected external packet.

3. An integrated information communication system as claimed in Claim 1 wherein:

said external packet is transmitted/received between said communication company management networks by employing an address commonly used between said communication company management networks;

when a packet filter of a boundary relay apparatus detects that the destination address contained in said external packet is located in a range of an address which is not opened outside network, said packet filter discards said external packet; and either encryption or a digital signature can be applied which can be agreed by said two communication companies for said external packet to be transmitted/received.

4. An integrated information communication system, wherein:

114

an external packet reached to an access control apparatus via an external communication line is converted into an internal packet assigned with a simple header based on a conversion table in said access control apparatus, wherein said external packet includes an external source address and an external destination address, said internal packet comprises said simple header and said external packet, and said simple header includes said internal destination address and information section;

said internal packet is sent from a network node via relay apparatus;

said internal destination address is referred at said relay apparatus, is transferred in said integrated information communication system and then reaches to another access control apparatus;

said external packet is restored from said internal packet and is transferred to an external communication line of said integrated information communication system; and

only when a set of three addresses of an originating internal address assigned at a logic terminal of a communication line termination inputting said external packet, an external destination address of said inputted external packet and said external source address is registered as the record in the conversion table of said input side access control apparatus, said external packet is converted into said internal

115

packet.

5. An integrated information communication system as claimed in Claim 4, wherein said set is two addresses of said originating internal address and a external destination address in the inputted external packet.

6. An integrated information communication system as claimed in Claim 4, wherein record of said conversion table is two or more, group of said destination address is different at respective records for an internal address assigned to logic terminal of a communication line terminal and a transfer destination of said internal packet is changeable by changing an external a destination address inputting from said same logic terminal.

7. An integrated information communication system as claimed in Claim 4, wherein only when a result of logical product of a destination address of said inputted external packet and a destination address mark in record of said conversion table coincides with a destination address in said same record, said external packet is converted into said internal packet.

8. An integrated information communication system as

claimed in Claim 4, wherein said internal packet is a optical frame.

9.   An integrated information communication system as claimed in Claim 2, wherein upper-grade protocol in said IP packet is referred, and a priority degree of next stage of internal packet reached at said access control apparatus from inside of said internal information communication system is selected by designating a record of said conversion table in accordance with a type of said upper-grade protocol.

10.   An integrated information communication system as claimed in Claim 4, wherein upper-grade protocol in said IP packet is referred, and a priority degree of next stage of internal packet reached at said access control apparatus from inside of said internal information communication system is selected by designating a record of said conversion table in accordance with a type of said upper-grade protocol.

11.   An integrated information communication system as claimed in Claim 10, wherein when said upper-grade protocol is TCP, said priority degree can be selected at every upper-grade port numbers.

12.   An integrated information communication system as

claimed in Claim 10, wherein when said upper-grade protocol is UDP, said priority degree can be selected at every upper-grade port numbers.

13. An integrated information communication system as claimed in Claim 2, wherein upper-grade protocol in said IP packet is referred, and a priority degree of next stage of external packet reached at said access control apparatus from outside of said internal information communication system is selected by designating a record of said conversion table in accordance with a type of said upper-grade protocol.

14. An integrated information communication system as claimed in Claim 4, wherein upper-grade protocol in said IP packet is referred, and a priority degree of next stage of external packet reached at said access control apparatus from outside of said internal information communication system is selected by designating a record of said conversion table in accordance with a type of said upper-grade protocol.

15. An integrated information communication system as claimed in Claim 14, wherein when said upper-grade protocol is TCP, said priority degree can be selected at every upper-grade port numbers.

16.   An integrated information communication system as claimed in Claim 14, wherein when said upper-grade protocol is UDP, said priority degree can be selected at every upper-grade port numbers.

17.   An IP network, wherein said IP network has access control apparatus, said access control apparatus includes a conversion table which controls conversions from an external packet to an internal packet and from the internal packet to the external packet, said conversion table includes plural records, a terminal address at a destination side is registered as an external destination address item in the record, and only when a destination address is non-private address, the internal packet is transferred in said IP network by regarding the external packet as the internal packet.

18.   An IP network, wherein said IP network has access control apparatus, said access control apparatus includes a conversion table which controls conversions from an external packet to an internal packet and from the internal packet to the external packet, said conversion table includes plural records, and transmitting permission of the internal packet is decided by designating any one of source transmitting permission and destination transmitting permission in the record.

19.   An IP network, wherein said IP network has access control apparatus, said access control apparatus includes a conversion table which controls conversions from an external packet to an internal packet and from the internal packet to the external packet, said conversion table includes plural records, and receiving permission of the internal packet is decided by designating source receiving permission in the record.

20.   An IP network as claimed in Claim 18, wherein charging of said IP network is carried out by designating any one of the source transmitting permission and the destination transmitting permission in the record.

21.   An IP network as claimed in Claim 19, wherein charging of said IP network is carried out by designating the source receiving permission in the record.

22.   An access control apparatus, wherein said access control apparatus connects terminals each other via a communication line and includes a conversion table which controls conversions from an external packet to an internal packet and from the internal packet to the external packet, said conversion table includes plural records, transmitting permission of the internal packet is decided by designating any one of source transmitting permission and destination transmitting

120

permission in the record, and/or receiving permission of the
internal packet is decided by designating source receiving
permission in the record.